Differential Pressure Meter
Media 6 with LCD
Media 6 with LED

Media 6 with LCD and attached valve block (left), Media 6 with LED (right)

Mounting and Operating Instructions

EB 9527-1 EN

Firmware A 2.11 (LCD), B 2.11 (LED)
Edition November 2005

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Safety instructions

- *Assembly, commissioning and operation of the device may only be performed by trained and experienced personnel familiar with this product.*
  According to these mounting and operating instructions, trained personnel is referred to persons who are able to judge the work they are assigned to and recognize possible dangers due to their specialized training, their knowledge and experience as well as their knowledge of the relevant standards.
- *Explosion-protected versions of this device may only be operated by personnel who have undergone special training or instructions or who are authorized to work on explosion-protected devices in hazardous areas. See section 9 for more details.*
- *Any hazards which could be caused by the process medium and the operating pressure in the instrument are to be prevented by means of appropriate measures.*
  Make sure that the instrument is only used where temperatures and operating pressure do not exceed the sizing data specified in the order.
  The Media 6 Differential Pressure Meter is not certified for measuring flammable gases or liquids in Zone 0 areas.
- *Proper shipping and appropriate storage are assumed.*

Note! *Devices with the CE mark meet the requirements specified in the Directive 94/9/EC and the Directive 89/336/EEC.*
The Declaration of Conformity is available on request.

Table 1 · Device firmware versions

Modifications in device firmware compared to the previous version	
Previous version	**New version**
A 2.03/B 2.03	A 2.10/B 2.10
Limit switches	The limit switches A1 and A2 are configured over software as minimum and maximum alarms. They can be adjusted separately over the keys on the device.
Filling limit during operation	The filling limit during operation UCW can be set over the keys on the device independently of the limit switches.
A 2.10/B 2.10	A 2.11/B 2.11
Error code	The current output of the Media 6 device is switched to ≤ 3.6 mA.

Modifications in device firmware compared to the previous version	
Previous version	New version

1 Design and principle of operation

The Media 6 Differential Pressure Meters measure and indicate the differential pressure or measured variables derived from the differential pressure. They are designed for gases and liquids, for example, for liquid level measurement in pressurized vessels.

The measuring device consists of a dp cell and an indicating unit. The cell has a measuring diaphragm and range springs designed for a certain measuring span, and the indicating unit is equipped with either an LCD (liquid crystal display) or an LED (light-emitting diode) to indicate important operating conditions.

The differential pressure $\Delta p = p_1 - p_2$ acts on the measuring diaphragm (1.1) which is counterbalanced by the range springs (1.2). The movement made by the measuring diaphragm and lever (1.3) which is proportional to the differential pressure is led by the elastic disc (1.4) out of the pressure chamber and converted by the displacement sensor (2) into an electric signal.

This signal is compared with the data stored in the EEPROM (4) and processed in the microprocessor (3) which controls both the display (7, LCD or LED) and the D/A converter (9) for the output signal which is issued at connector **A** as a two-wire 4 to 20 mA transmitter signal.

The SERIAL INTERFACE (10) enables the device to be configured using a special memory pen or a connecting cable and a PC which has SAMSON's TROVIS-VIEW Configuration and Operator Interface installed.

The user-specific data are saved in the EEPROM (4). Data can also be saved in this manner and kept until they are overwritten again. The operating data of Media 6 can also be uploaded to the memory pen and downloaded to the device on site.

The memory pen can be configured on a PC with the corresponding TROVIS-VIEW software, using the operating data, e.g. type of gas, gas density, tank design and position of the limit switches. The data are used to convert the differential pressure into a value proportional to the tank contents then used to display and issue the direct current signal from 4 to 20 mA.

Four types of gas and various write protection functions for stored data can be selected using the DIL switches (6).

Several operating functions (zero and span adjustment, filling limit during operation, limit switches and test function settings, etc.) as well as operating states (load/save operating values) can be set using three keys (5).

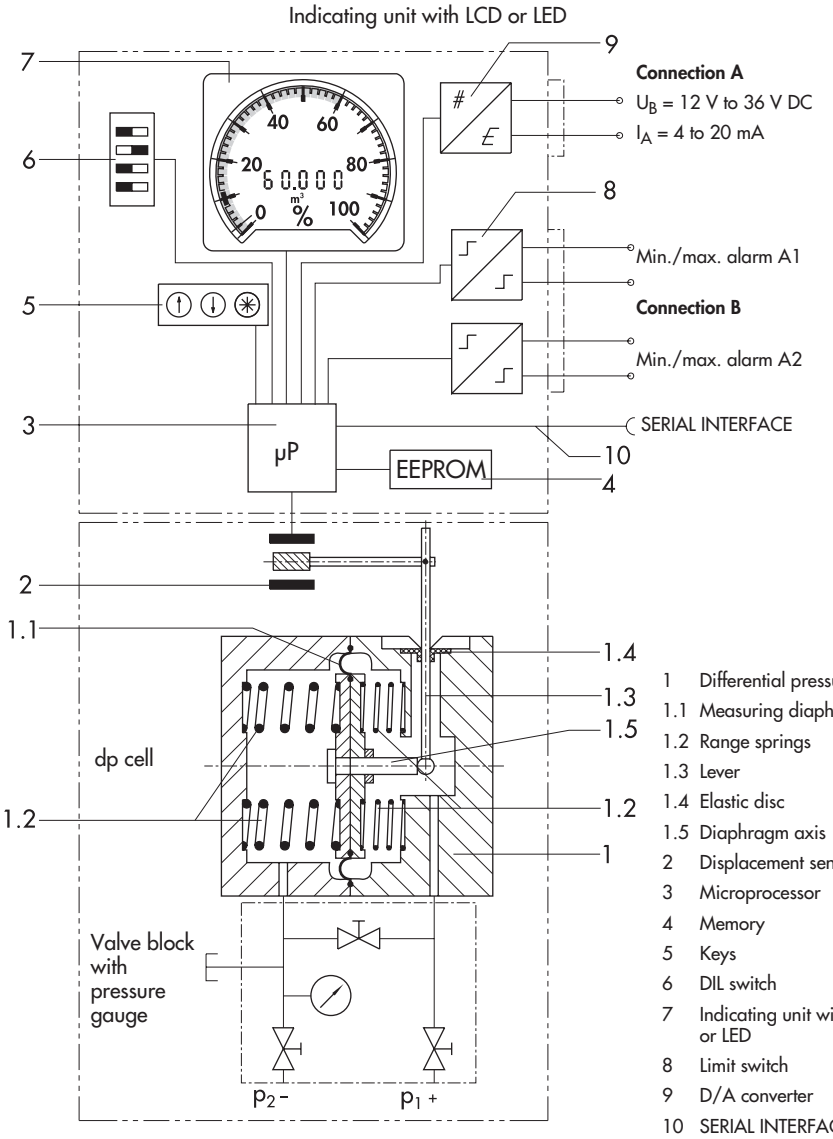


Fig. 1 · Functional diagram

1.1 Technical data

Table 2 · Technical data

Differential pressure meter										
Measuring range	mbar	0 to 100	0 to 160	0 to 250	0 to 400	0 to 600	0 to 1000[1)]	0 to 1600[1)]	0 to 2500[1)]	0 to 3600[1)]
Adjustable measuring span in mbar										
Class ±1.0%	from to			≤ 250 ≥ 125	≤ 400 ≥ 100	≤ 600 ≥ 150	≤ 1000 ≥ 1250	≤ 1600 ≥ 1400	≤ 2500 ≥ 1500	≤ 3600 ≥ 1500
Class ±1.6%	from to	≤100 ≥ 60	<160 ≥ 60	<125 ≥ 50	<100 ≥ 80	<150 ≥ 120	<250 ≥ 200			
Class ±2.5%	from to	<60 ≥ 35 [2)]	<60 ≥ 32							
Nominal pressure		PN 50, overloadable on one side up to 50 bar								
Display		LCD Ø 90 or LED Ø 3								
Performance		Output and reading linear to the tank contents								
Deviation from terminal-based linearity		< ±1.0 % or < ±2.5 % (including hysteresis) depending on the span selected								
Sensitivity		< 0.25 % or < ±0.5 % depending on the span selected								
Static pressure effect		< 0.03 % / 1 bar								
Influence of ambient temperature in the range between –20 to +70 °C On zero point On span		 < ±0.2 %/10 K < ±0.2 %/10 K								
Limit switches		Two software contacts A1 and A2, configurable as minimum or maximum alarms according to EN 60947-5-6								
Control circuit, adjustable in 1 % steps		Rating according to connected switching amplifier according to EN 60947-5-6, e.g. KFA6- SR2- Ex2.W or KFA-SR2- Ex1.W								
Hysteresis		1 % based on maximum tank capacity (MCN)								
Range of inversion, approx.		< 0.6 %								
Weight		Approx. 3 kg without valve block · Approx. 5 kg with valve block								

[1)] A class accuracy of 0.6 % can be expected for measuring ranges 1000, 1600, 2500 and 3600 mbar with spans ≤ 100 % to ≥ 50 % of the nominal range.

[2)] The class accuracy of Class 2.5 may not be reached in cases where the span does not fall within this specified span.

Note!
All pressures stated as gauge pressures · All errors and deviations stated in % of the adjusted span.

The Media 6 Differential Pressure Meter is **not** certified for measuring flammable gases or liquids in Zone 0 areas.

Version	5006-0	5006-1
Output	4 to 20 mA	
Permissible load R_B in ohm	$R_B = \frac{U_B - 12\ V}{0.020\ A}$	
Output current circuit	–	Intrinsically safe (Media 6 with LCD and LED) · Refer to PTB 00 ATEX 2074 in appendix
Supply voltage U_B two-wire transmitter	12 to 36 V	12 to 28 V DC only in combination with an intrinsically safe circuit
Permissible ambient temperature	–40 to +70 °C	T6 max. +60 °C T5 max. +70 °C
Permissible storage temperature	–40 to +80 °C	
Degree of protection	IP 65 according to DIN VDE 0470 and EN 60529	
Materials		
Version	Standard version	
Housing	CW617N (brass) or CrNi steel	
Measuring diaphragm and seals	ECO (others on request)	
Range springs	CrNi steel	
Diaphragm plates and functioning parts		
Lever		
Indicating unit	Polycarbonate, polyamide	

Note!

Devices intended for oxygen service are labeled

"Oxygen! Keep free of oil and grease!"

These versions are cleaned and assembled by the manufacturer under special conditions. Appropriate gloves need to be worn on replacing parts that come into contact with oxygen, e.g. measuring springs.

When returning devices designed for oxygen service to the manufacturer for repair, the sender assumes full responsibility that the handling of the devices to be repaired meets the requirements specified in VBG 62 or equivalent regulations until the devices are handed over to the manufacturer. Otherwise, SAMSON AG will not accept any responsibility.

2 Installation

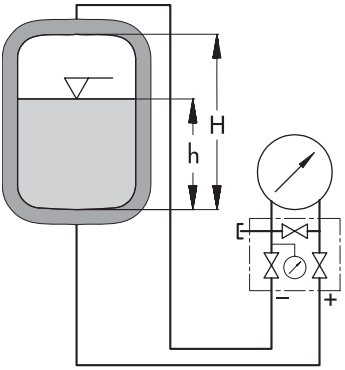


Fig. 2 · Set-up for liquid level measurement. The example shows the standard set-up in a cryogenic application.

2.1 Instrument set-up

2.1.1 Media 6 Indicating Unit

Make sure that the high-pressure line is connected to the high-pressure connection and the low-pressure line to the low-pressure connection.

Note!
Special fittings are required to connect measuring lines. In addition, depending on the instrument set-up, connections left unused must be fitted with plugs or vent plugs (see section 2.2 on accessories for more details).

- Clean the connections carefully prior to connecting the measuring lines. Do not clean the instrument using compressed air or pressurized water.
- Secure the instrument at the place of installation to a pipe, wall or mounting plate **free of vibration**.
- For attachment to vertical or horizontal pipes, use a mounting component with clamp. For wall mounting, use a mounting component without clamp. See the dimensional drawing on page 30 for mounting in control panels.

Note!
We recommend installing one shut-off valve in each measuring line and, additionally, an equalizing valve, or a SAMSON valve block as a compact assembly to shut off both measuring lines.
Additionally, the zero point can be checked at the indicating unit by bypassing the circuit.

2.1.2 Valve block

The three valves combined in a valve block with test and pressure gauge connections (Fig. 3), which are flanged directly onto the bottom of the dp cell, are available as accessories.

2.1.3 Shut-off and equalizing valves

As an alternative to the SAMSON valve block, both shut-off valves as well as the bypass valve/equalizing valve can also be installed as shown in Fig. 3.1.

2.2 Accessories for connections

Open product connections are protected against contamination by NBR plugs.

Required screw fittings, sealing or vent plugs and screw joints with restrictions used to dampen vibrations caused by the process medium (especially when measuring gases) must be ordered separately.

The screw fittings and SAMSON valve blocks are listed together with their order numbers in the Data Sheet T 9555 EN.

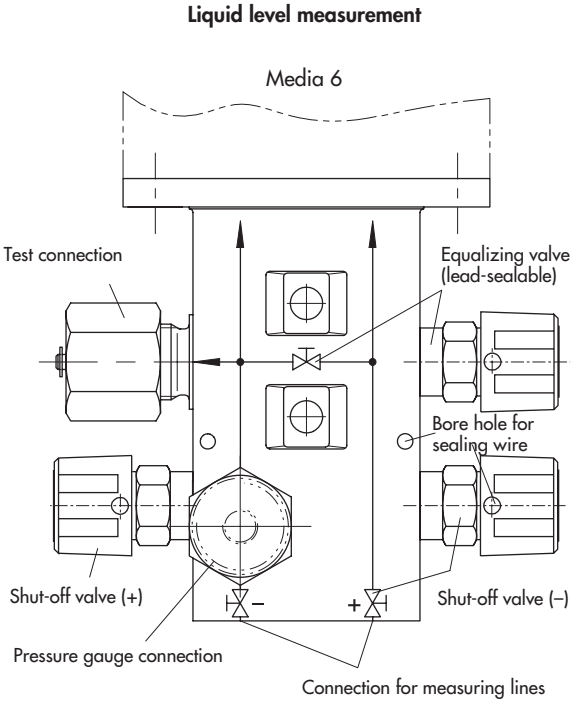


Fig. 3 · SAMSON valve block

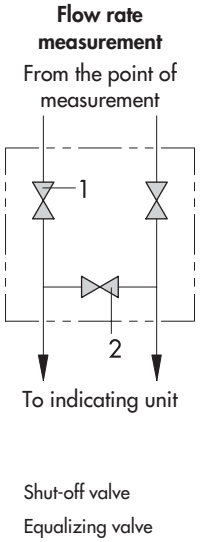


Fig. 3.1 · Shut-off valves and equalizing valves, separate or combined in a block (schematics)

3 Electrical connection

- *As far as the electrical installation of the device is concerned, the relevant national regulations governing the installation of electrical equipment and the national accident prevention regulations of the country of destination must be adhered to. In Germany, these are the VDE regulations and accident prevention regulations of the employer's liability insurance.*
- *For assembly and installation in hazardous areas, the following standards apply: EN 60079-14: 1997 (VDE 0165 Part 1/8.98) "Electrical apparatus for explosive gas areas" and EN 50281-1-2: (VDE 0165 Part 2) 11.99 "Electrical apparatus for use in the presence of combustible dust."*
- *For intrinsically safe electrical apparatus that are certified according to the Directive 79/196/EEC, the data specified in the certificate of conformity apply for connection of intrinsically safe circuits.*
- *For intrinsically safe electrical apparatus that are certified according to the Directive 94/9/EC, the data specified in the EC type examination certificate apply for connection of intrinsically safe circuits.*
- ***Note:** It is absolutely necessary to keep to the terminal plan specified in the certificate. Reversal of the electrical connections may cause the explosion protection to be ineffective!*
  Do not tamper with screws inside or on the case which have been sealed with paint.

Note on the selection of cables and wires:
To run several intrinsically safe circuits in a multi-core cable, read paragraph 12 of EN 60079-14 (VDE 0165/8.98). For generally used insulating materials, for example polyethylene, the radial thickness of the conductor insulation has to be at least 0.2 mm. The diameter of a single wire in a flexible conductor shall not be smaller than 0.1 mm. The conductor ends are to be protected from unlaying, e.g. by using wire end ferrules.

Connector A

Two-wire connection for 4 to 20 mA signal, perm. load R_B.=

$$R_B = \frac{U_B - 12\ V}{0.020\ A}\ \text{in ohm}$$

The supply voltage is usually 24 V DC. It may be between at least 12 and maximum 36 V DC while considering the supply lead's resistance directly at the connecting terminals of the connector.

Connector B

Connection for two software limit switches in type of protection "Intrinsic Safety" EEx ia IIC for control circuits conforming with NAMUR to switching amplifiers as per EN 60947-5-6.

Maximum values:
U_i = 20 V, I_i = 60 mA, P_i = 250 mW
C_i = 5.3 nF, L_i = negligible

Test connection

An ammeter can be connected to the test terminals + and – for checking the output signal on calibration. The output signal of the two-wire circuit is not interrupted.
Make sure that there is a load of < 0.4 V DC at the ammeter for the test connection.

Caution!
If the cable socket is removed from the connector, the degree of protection IP 65 becomes ineffective!
Protect the connector from moisture during installation work and transport by keeping the cable socket part screwed on and sealed!

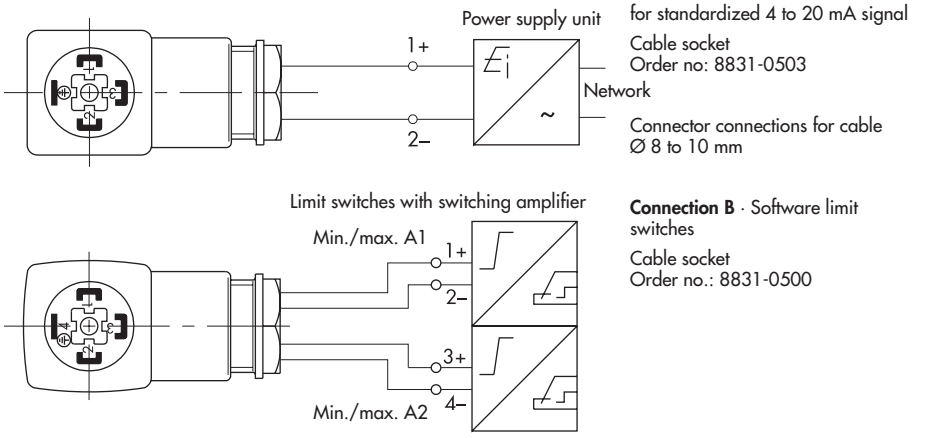


Fig. 4 · Terminal assignment of DIN 43650 connector, form A

Table 3 · Summary of functions of both software limit switches A1 and A2 at connector B

Proximity switch for ...	Gas tapping/Tank filling (1 min./1 max. alarm)		Gas tapping (2 min. alarm)		Tank filling (2 max. alarms)	
Alarm contact	A1	A2	A1	A2	A1	A2
Value falls below limit	High resistance	Low resistance	High resistance	High resistance	Low resistance	Low resistance
Value exceeds limit	Low resistance	High resistance	Low resistance	Low resistance	High resistance	High resistance

Both limit switches A1/A2 can be configured separately to function as maximum or minimum alarms.

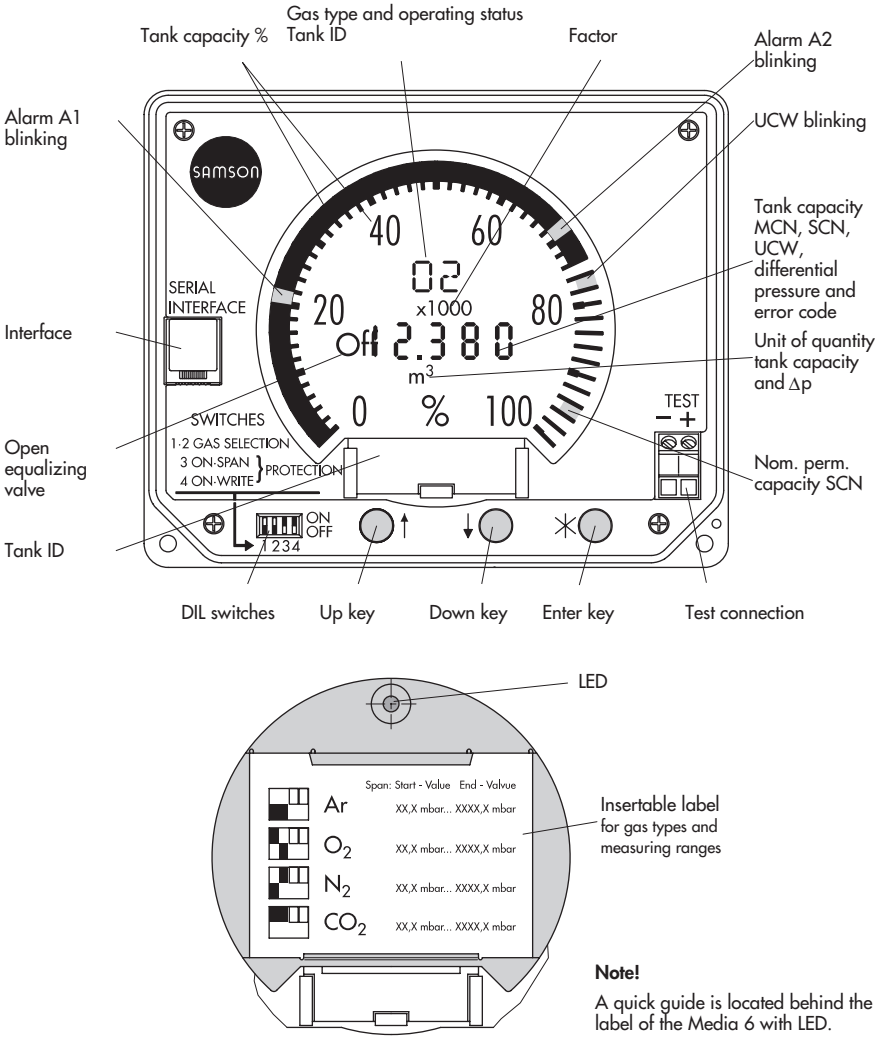
Contact assumes low resistance

Switching signal **"ON"** · Function: Contact closed or output effectively conducting, power consumption ≥ 3 mA

Contact assumes high resistance

Switching signal **"OFF"** · Function: Contact open or output effectively non-conducting, power consumption ≤ 1 mA

4 Operation



Note!

A quick guide is located behind the label of the Media 6 with LED.

Fig. 5 · Indicating unit with LCD (top) and LED (bottom)

4.1 Display and operating elements

All the necessary information and measured data stored in the instrument's memory are shown on the display of **Media 6 with LCD**.

Although the Media 6 with LED version does not have such a digital display, important operating conditions are indicated by the LED.

Three keys are used to operate the differential pressure meter:

- ⓘ Up key
- ⓓ Down key
- ⊛ Enter key

and a DIL switch with four switches to select the type of gas and write protection function.

4.1.1 Changing over display mode for Media 6 with LCD

Press the ⊛ key to change over from the standard display to seven other display modes.

After 8 seconds or after the message has finished running across the display, the display returns automatically to the standard display.

O2	e.g. gas name and current tank
ΔP	current differential pressure
MCN	Max. capacity nominal max. tank capacity
MCN/R	100 % capacity assigned to 20 mA signal
SCN	Save capacity nominal geometric capacity up to overflow/ gauge pipe
SCN/R	100 % capacity assigned to 20 mA signal
UCW	Useable capacity work
ΔP100	Maximum differential pressure
PTANK	Nominal tank pressure Indicated value corresponds to the pressure assigned to the density (liquid) according to vapor pressure diagram. If the calculations for ***MCN*** and ***SCN*** are based on density at 1 bar, then 1 bar is shown for ***PTANK***.
X-TANK-16	e.g. tank ID as running text
ERROR	Error message displayed automatically when an error occurs (see section 8 on troubleshooting)
OFF	Special signal on opening the equalizing valve, I = 3.6 mA (refer to section 4.1 of EB 9527-2 EN).

5 Start-up

1. Open the equalizing valve.
2. Slowly open the high-pressure line.
3. Close the equalizing valve or the bypass of the valve block.
4. Open the low-pressure line.

Note!
Check the zero point at the dp cell, if necessary, as described in section 6.3, and restart the instrument.

6 Settings

6.1 Write protection

The instrument has two write protection functions:

WRITE PROTECTION to prevent the operating data from being changed unintentionally.

SPAN PROTECTION as an additional write protection for the span setting.

The write protection at switch 4 of the DIL switch must first be switched **OFF** before various operating functions can be carried out and switched **ON** again afterwards.

6.2 Selecting the gas type

The required gas type can be selected using the positions of switches **1** and **2** according to the table and diagram below.

Gas 1	**1**	OFF	**2**	OFF
Gas 2	**1**	ON	**2**	OFF
Gas 3	**1**	OFF	**2**	ON
Gas 4	**1**	ON	**2**	ON

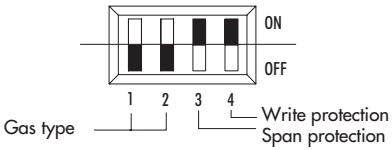


Fig. 6 · DIL switch with switches 1 to 4

Media 6 with LCD

The gas formula of the gas chosen, e.g. ***AR***, ***CO2***, ***O2***, ***N2***, etc. appears on the display.

- Select the gas type according to the table using the DIL switch.

The display is not activated, just the selected gas is shown!

Press ⊛ to confirm the new gas type. The display is reactivated.

Media 6 with LED

The four selectable gas types are listed downward from 1 to 4 or specified with their designation on the insertable label.

Use the switches 1 and 2 of the DIL switch to select the gas type, also refer to the table and Fig. 6.

The gas type selected is indicated by the number of times the LED blinks.

Gas 1 Pause - Blinks x1 - Pause etc.

Gas 2 Pause - Blinks x2 - Pause etc.

Gas 3 Pause - Blinks x3 - Pause etc.

Gas 4 Pause - Blinks x4 - Pause etc.

Press ⊛ to confirm the new gas type. The LED goes out.

6.3 Checking the zero point

On checking the zero point, the pressure must be equal in both measuring chambers at atmospheric pressure. Thas means the current signal at connector A or at the TEST connection must be 4 mA when the differential pressure Δp = 0 mbar (see test arrangement in Fig. 7.)

Note!

When activating the gas column correction (refer to section 4.2.2 in EB 9527-2 EN), it is important to take into account that the gas columns in the measuring lines reduce the differential pressure as they have an opposing effect on each other. At a pressure equilibrium of Δp = 0 mbar, the meter readout is negative for the tank capacity and the output signal indicates a value < 4 mA. In this case, readjust the zero point as described in following so that the display indicates 0 % = 0000 when Δp = 0 mbar. The output signal changes, but indicates a value < 4 mA in accordance with the gas column correction data.

Media 6 with LCD

At a differential pressure of Δp = 0 mbar, the display must indicate 0 % or ***0000***.

Correction when the tank is empty

- Write protection: switch **4** to **OFF**

  Press and hold down ⓓ key. ***ZERO*** and ***X,0X*** mbar appear on the display. Current signal I shows the present mA value.

  Press ⊛ key to adust the zero point.

Release ⓓ key, 0 mbar appears on the display. Current signal I = 4 mA.

- Activate the write protection: switch **4** to **ON**.

Correction when the tank is filled

If the differential pressure lines are equipped with shut-off and equalizing valves, zero point can be checked even when the plant is in operation. To achieve this, place the valve block or equalizing valve in the test position to obtain the same pressure in both measuring chambers.

1. Close the shut-off valve in the high-pressure line.
2. Open the equalizing valve or bypass in the valve block.
3. Close the shut-off valve in the low-pressure line.

The valve block is in test position!

- Write protection: switch **4** to **OFF**
  Press and hold down ⓓ key. ***ZERO*** and ***X,X*** mbar appear on the display.
  Current signal I indicates the present mA value.
  Press ⓢ key to adjust the zero point.
  Release ⓓ key, 0 mbar appears on the display.
  Current signal I = 4 mA corresponding to the liquid level at 0 mbar differential pressure. (See note on gas column correction on page 18.)
- Activate write protection: switch **4** to **ON**.
- Return valve block or equalizing valve to operating position:

1. Open the shut-off valve in the low-pressure line.
2. Close equalizing valve.
3. Open the shut-off valve in the high-pressure line.

Caution! For devices used to measure **oxygen**, the test medium must be **free of oil and grease!**

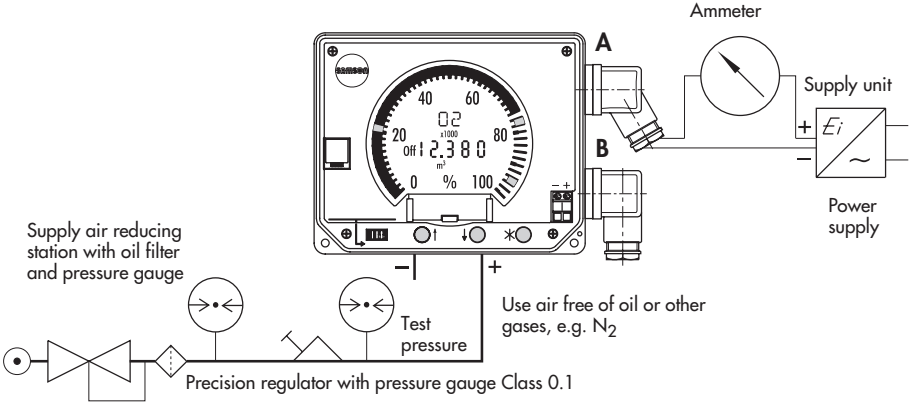


Fig. 7 · Test arrangement

Media 6 with LED

According to the test arrangement, a current signal of 4 mA must be supplied at connector A or at the TEST connection at a differential pressure of $\Delta p = 0$ mbar.

Correction when the tank is filled

1. Close the shut-off valve in the high-pressure line.
2. Open the equalizing valve or bypass in the valve block.
3. Close the shut-off valve in the low-pressure line.

The valve block is in test position!

- Write protection: switch **4** to **OFF**.
  Press and hold down ⓓ key. LED starts to blink rapidly. Current signal I indicates the present mA value.

  Press ⓢ key to adjust the zero point.

  Current signal I = 4 mA corresponding to the liquid level at 0 mbar differential pressure. For gas column correction, the following applies: I < 4 mA.
  (See also the note on gas column correction on page 18.)

  The LED is lit continuously for approx. two seconds.

  Release ⓓ key.
- Return valve block or equalizing valve to operating position:

1. Open the shut-off valve in the low-pressure line.
2. Close the equalizing valve.
3. Open the shut-off valve in the high-pressure line, the LED goes off.

- Activate the write protection: turn switch **4** to **ON**.

6.4 Checking the measuring range (span)

A basic calibration with a linear characteristic based on the upper range value of the dp cell was performed at the factory (default setting).

The instrument adopts the tank characteristic based on the entered tank and gas data and calculates values proportional to the tank capacity to indicate and issue the output signal from 4 to 20 mA using the gas data for the gas selected.

In exactly the same way, the differential pressure meter calculates the maximum possible differential pressure Δp 100 in mbar for each type of gas and the predetermined reference height (total height or gauge pipe). The output signal of 20 mA must correspond to $\Delta p100$.

Connect the differential pressure meter as shown in Fig. 7 to check the measuring range.

Note!
It is useful to activate the gas with the largest density to adjust the span. The values for gases with smaller densities are also calibrated with this calibration procedure.
Important!
To calibrate the gas currently available, its indicated value must be at least 85 % of the adjusted upper range value of $\Delta p100$.
Note!
*The span calibration is protected (switch **3**) to prevent the span from being adjusted by incorrect operation of the keys.*

Media 6 with LCD

Checking the measuring range (span)
If the ⊛ key is pressed five times, **Δp100**, which is the value for the maximum differential pressure, appears on the display.

First check zero, as described in section 6.3.

Press ⊛ key five times. Δp100 = X.XXX (x1000) mbar appears on the display.

- Use a precision regulator to apply a test pressure corresponding to the maximum differential pressure Δp100 while monitoring the pressure gauge.

Set point values: Δp = 0 mbar = 4 mA (See also note on gas column correction on p. 18).

Δp100 = XXXX mbar = 20 mA.

If the reading and output signal do not correspond with the indicated value Δp100, the upper range value of the measuring range (span) must be readjusted.

Checking the measuring range (span)
- First check zero, as described in section 6.3.
- Write protection: switch **4** to **OFF**.
  Span protection: switch **3** to **OFF**.

Press ⊛ key five times. Δp100 = X.XXX (x1000) mbar appears on the display.

- Use a precision regulator to apply a test pressure corresponding to the maximum differential pressure Δp 100 while monitoring the pressure gauge.

Keep ⓣ key pressed down, the current measured value is shown in the display.
Current signal I shows the present mA value.

Press ⊛ key, the span is calibrated, current signal goes to 20 mA. The reading is equal to Δp100.

Release ⓣ key.

- Write protection: switch **4** to **ON**.
  Span protection: switch **3** to **ON**.

Media 6 with LED

Checking the measuring range (span)
- First check zero, as described in section 6.3.
- Use a precision regulator to apply a test pressure corresponding to the maximum differential pressure Δp100 while monitoring the pressure gauge.

Set point values: Δp = 0 mbar = 4 mA (See also note on gas column correction on p. 18).

Δp100 % = XXXX mbar = 20 mA.

If the reading and output signal do not correspond with the indicated value Δp100%, the upper range value of the measuring range (span) must be readjusted.

Checking the measuring range (span)
- Write protection: switch **4** to **OFF**.
  Span protection: switch **3** to **OFF**.
- Use a precision regulator to apply a test pressure corresponding to the maximum differential pressure Δp100 while monitoring the pressure gauge.

Keep ⓣ key pressed down, current signal I shows the present mA value. LED starts to blink rapidly.

Press ⊛ key. The span is calibrated, current signal goes to 20 mA. The LED is lit continuously for approx. two seconds.

Release ⓣ key, the LED goes out.

- Write protection: switch **4** to **ON**.
  Span protection: switch **3** to **ON**.

6.5 Setting limit switches

6.5.1 Max. limit for filling limit during operation

Note!
The filling limit during operation set over the software can only be changed over the keys in the Media 6 version with LCD.

UCW Marker

- Write protection: switch **4** to **OFF**.

  Press and hold down ⊛ key 8 seconds long until ***UCW*** appears at the top of the display and underneath the associated % value.

  Press ⊛ key to confirm the display.

  Press ⓓ key to reduce the value in steps of 1 % or press ⓤ key to increase the value.

  Press ⊛ key to confirm new setting.

- Write protection: switch **4** to **ON**.

6.5.2 Alarms A1 and A2

Media 6 with LCD

Alarm ***A1*** and ***A2*** markers

Both limit switches are already set over the software either as min. or max. alarms. ***A1MIN*** or ***A1MAX*** as well as ***A2MIN*** or ***A2MAX*** appear on the display. Both limit switches must be set and confirmed separately.

- Write protection: switch **4** to **OFF**.

  Press and hold down ⊛ key 8 seconds long until ***UCW*** appears at the top of the display.

  Press ⓤ or ⓓ key to switch between alarm ***A1*** or ***A2***.

  Press ⊛ key to confirm selected alarm.

  Press ⓓ key to reduce the value in steps of 1 % or press ⓤ key to increase the value.

  Press ⊛ key to confirm new setting.

  Press and hold down ⊛ key 8 seconds long until ***UCW*** appears at the top of the display.

  Press ⓤ or ⓓ key to switch over to the second alarm that needs to be set.

  Confirm selected alarm and set as described above.

- Write protection: switch **4** to **ON**.

Media 6 with LED

Connect an ammeter to the power supply at connector **A** (Fig. 7) or to the **TEST** terminal.

Both limit switches are already set over the software as either min. alarm or max. alarms and are displayed to the assigned differential pressure corresponding to a current between 4 and 20 mA. Both alarms need to be set and confirmed separately.

- Write protection: switch **4** to **OFF**.

Alarm A1

Press and hold down ⊛ key 8 seconds long until the LED starts to blink slowly.

Press ⊛ key to display the currently set A1 alarm at the ammeter. The LED lights up.

Press ⓓ key to reduce the value in steps of 1 % or press ⓤ key to increase the value.

Press ⊛ key to confirm new setting. The LED goes off.

Alarm A2

Press and hold down ⊛ key 8 seconds long until the LED starts to blink slowly.

Press ⓤ or ⓓ key to switch to the A2 alarm, indicated by the LED which starts to blink quickly.

Press ⊛ key to confirm the selected alarm. The LED lights up.
The currently set A2 alarm is indicated at the ammeter.

Press ⓓ key to reduce the value in steps of 1 % or press ⓤ key to increase the value.

Press ⊛ key to confirm new setting. The LED goes off.

- Write protection: switch **4** to **OFF**.

6.6 Ammeter function

In order to check the functioning of connected devices, an output signal of 4 to 20 or 22.8 mA can be adjusted for a short time regardless of the current liquid level in the tank.

Media 6 with LCD

- Write protection: switch **4** to **OFF**.

Ammeter 4 mA

Press and hold down ⊛ key.

Press ⓓ key within 8 seconds and hold down, output signal I = 4.0 mA.

Release ⓓ key to change the signal between 4.0 mA and 22.8 mA.

Release ⊛ key, current signal I indicates the mA value corresponding to the tank capacity.

20 mA ammeter

Press and hold down ⊛ key.

Press ⓤ key within 8 seconds and hold down, output signal I = 20.0 mA.

Release ⓤ key to change the signal between 20.0 mA and 22.8 mA.

Release ⊛ key, current signal I indicates the mA value corresponding to the tank capacity.

- Write protection: switch **4** to **ON**.

Media 6 with LED

- Write protection: switch **4** to **OFF**.

Ammeter 4 mA

Press and hold down ⊛ key.

Press ⓓ key within 8 seconds and hold down, output signal I = 4.0 mA indicated by the LED blinking quickly.

Press ⓓ key to change the signal between 4.0 mA and 22.8 mA indicated by an illuminated LED.

Release ⊛ key, current signal I indicates the mA value corresponding to the tank capacity. The LED goes out.

Ammeter 20 mA

Press and hold down ⊛ key.

Press ⓤ key within 8 seconds and hold down, output signal I = 20.0 mA indicated by the LED blinking slowly.

Press ⓤ key to change the signal between 20.0 mA and 22.8 mA indicated by an illuminated LED.

Release ⊛ key, current signal I indicates the mA value corresponding to the tank capacity. The LED goes out.

- Write protection: switch **4** to **ON**.

7 Memory pen

7.1 Data transfer using memory pen

The memory pen is a portable data carrier. It transfers standardized data which corresponds with the type of tank and the relevant gas data to Media 6 instruments on site over the RS-232 interface (SERIAL INTERFACE), without requiring a PC or a notebook to be connected.

A label tag can be attached to the memory pen for identification.

The customized data is transferred to the memory pen from a PC/notebook using the TROVIS-VIEW Configuration and Operator Interface (see EB 9527-2 EN) or the data can be copied from another Media 6 instrument.

The memory pen can be configured to write and read, read only or write only depending on the status determined by TROVIS-VIEW, see table below:

Note!
Memory pens with data sets or existing configurations which were created with earlier TROVIS-VIEW software versions (1.02 to 2.20) are not 1:1 compatible with Media 6 devices with firmware versions A 2.10 or B 2.10.
They must first be loaded and converted over TROVIS-VIEW software version (2.30 or higher).
Memory pens must be configured to suit the Media 6 firmware version.

Media 6 with LCD

Data transfer from Media 6 to memory pen (upload) and **from memory pen to Media 6 (download). Status: Write and read**

- Insert memory pen into the SERIAL INTERFACE jack.

MEMWR appears at the top of the display.

Press ⓘ or ⓓ key to switch between
MEMWR = Write data from Media 6 device to the memory pen and

MEMRD = Read data from the memory pen to the Media 6 device.

Table 4 · Memory pen status

Memory pen status	With LCD	LED indicated by blinking sequence	Procedure
Write and read	***MEMWR*** or ***MEMRD***	Long blinking = writing Short blinking = reading	Write data from Media 6 to the memory pen or read data from the Media 6 device to the memory pen.
Read only	***MEMRD***	Short blinking	Read data from the memory pen to the Media 6 device.
Write only	***MEMWR***	Long blinking	Write data from Media 6 device to the memory pen.

- *MEMRD* write protection: switch **4** to **OFF**. Press ⊛ key to activate selection.

  RUN appears on the display. When the data are saved, ***DONE*** appears on the display. You can remove the memory pen.

- MEMRD write protection: switch **4** to **ON**.

Transfer data from memory pen to the Media 6 device
Status: Read only

- Write protection: switch **4** to **OFF**.
- Insert memory pen into the SERIAL INTERFACE jack.

MEMRD appears at the top of the display.

Press ⊛ key to start the data transfer.

RUN appears on the display. When the data are saved in the Media 6 device, ***DONE*** appears on the display. You can remove the memory pen.

- Write protection: switch **4** to **ON**.

Transfer data from the Media 6 device to the memory pen
Status: Write only

- Insert memory pen into the SERIAL INTERFACE jack.

MEMWR appears at the top of the display.

Press ⊛ key to start the data transfer.

RUN appears on the display. When the data are saved in the memory pen, ***DONE*** appears on the display. You can remove the memory pen.

Media 6 with LED

Transfer data from the Media 6 device to the memory pen or **from the memory pen to the Media 6 device**
Status: Write and read

- Insert memory pen into the SERIAL INTERFACE jack.

The LED blinks in short sequence to indicate that data are being read from the memory pen and blinks in a slow sequence to indicate that data are being written to the memory pen.

Press ⓘ or ⓓ key to switch between writing data from the Media 6 device to the memory pen and reading data from the memory pen to the Media 6 device.

- On selecting read from the memory pen: write protection, switch **4** to **OFF**. Press ⊛ key to activate selection. The LED illuminates
- Remove the memory pen when the LED goes off.
- Write protection: switch **4** to **ON**.

Transfer data from memory pen to the Media 6 device
Status: Read only

- Write protection: switch **4** to **OFF**.
- Insert memory pen into the SERIAL INTERFACE jack.

The LED blinks rapidly.

Press ⊛ key to start the data transfer, the LED goes on.

- You can remove the memory pen when the LED goes off.
- Write protection: switch **4** to **ON**.

Transfer data from the Media 6 device to the memory pen
Status: Write only

- Insert the memory pen into the SERIAL INTERFACE jack.

The LED blinks slowly.

Press ⊛ key to start the data transfer, the LED goes on.

- You can remove the memory pen when the LED goes off.

7.2 Connection to the PC

Media 6 can also be operated over the SERIAL INTERFACE jack from a PC/notebook using the TROVIS-VIEW Configuration and Operator Interface.

Refer to the Mounting and Operating Instructions **EB 9527-2 EN** for operation.

8 Troubleshooting

Errors that occur appear at the top of the LC display indicated by the word ***ERROR*** with the corresponding error code, e.g. 16, below it.

The blinking sequence of the LED indicates the error code of Media 6 with LED. For example, error code ***1*** is signaled as follows:

long medium 9x short

Refer to the table for the description of the error codes.

Reset or confirm errors by pressing the ⊛ key. Any new error messages then remain suppressed for 8 seconds.

Troubleshooting using the memory pen

If you have a SAMSON memory pen, it can be used, if necessary, to transfer new data to the instrument within this time.

Troubleshooting using a PC or notebook

Communication with a PC or notebook over the SERIAL INTERFACE jack functions even in the error mode.

Hardware errors

These errors are saved in the EEPROM and reset over the SERIAL INTERFACE after repair at the manufacturer's.

Table 5 · Error codes

Error code		Description	Remedy
Number on LCD	**LED blinking sequence**		
Hardware error			
1	1x long/medium/ 9x short	Oscillatory circuit differential inductor faulty	Return device to SAMSON for repair
2	1x long/1x short/ medium/8x short	RAM checksum error, RAM is defective	Return device to SAMSON for repair
4	1x long/2x short/ medium/7x short	EEPROM checksum error.	Return device to SAMSON for repair
Calibration or measuring range error or error in the tank characteristic			
8	1x long/3x short/ medium/6x short	Δp not within permissible range. The permissible range is between 20 and 110 % of the nominal range of dp cell.	Reset error and load other tank or gas data or use a suitable dp cell.
16	1x long/4x short/ medium/5x short	Error in the tank characteristic	The coordinates for the tank characteristic must be strictly monotonic increasing.
32	1x long/5x short/ medium/4x short	Calibration Δp sensor. Zero and span adjustment produce values outside of the permissible range. These values are not saved in the EEPROM.	Check zero and span adjustment, taking the Δp into account. Otherwise, return device to SAMSON for repair
Other errors			
64	1x long/6x short/ medium/3x short	Error in floating point.	Check tank or gas data.
128	1x long/7x short/ medium/2x short	Memory pen invalid. The memory pen ID is incorrect or faulty. Data cannot be read, however, writing to the memory pen is still possible.	Use a memory pen suitable for the Media 6 device.
256	1x long/8x short/ medium/1x short	Memory pen checksum error	Confirm error and transfer data again to memory pen. If error still occurs, replace the memory pen.
512	1x long/9x short/ medium	Error in RS-232 communication. The USART has detected an error, or there is a buffer overflow.	Confirm error and check communication.

Note

Error codes might refer to an addition of all the errors: for example, ERROR **24 ->** Error code **8** and error code **16**

When an error code appears on the display, the current output signal of the Media 6 device is switched to ≤ 3.6 mA.

Calibration and measuring range error or error in the tank characteristic

You can only exit the error mode by resetting.

If necessary, new data must first be loaded into the device (see section 7.1).

After confirming using the ⊛ key, 8 seconds remain until a new error message can appear.

The short time interval is long enough to start the transfer of new data from the memory pen.

The instrument is automatically reset on removing the memory pen.

With communication using a PC or notebook, the instrument is automatically reset after the data is transferred.

Other errors

Confirm errors by pressing ⊛ key to allow the instrument to continue working.

9 Servicing explosion-protected versions

In the event that a component of the Media 6 on which the explosion protection is based must be serviced, the instrument must not be put back into operation again until an expert has inspected the device according to explosion protection requirements, has issued a certificate stating this, or given the device a mark of conformity.

Inspection by an expert does not have to be carried out, if the manufacturer performs a routine test on the device prior to taking it into operation again, and the success of the routine test is documented by attaching a mark of conformity to the device.

Explosion-protected components may only be replaced by original checked components from the manufacturer.

10 Dimensions in mm

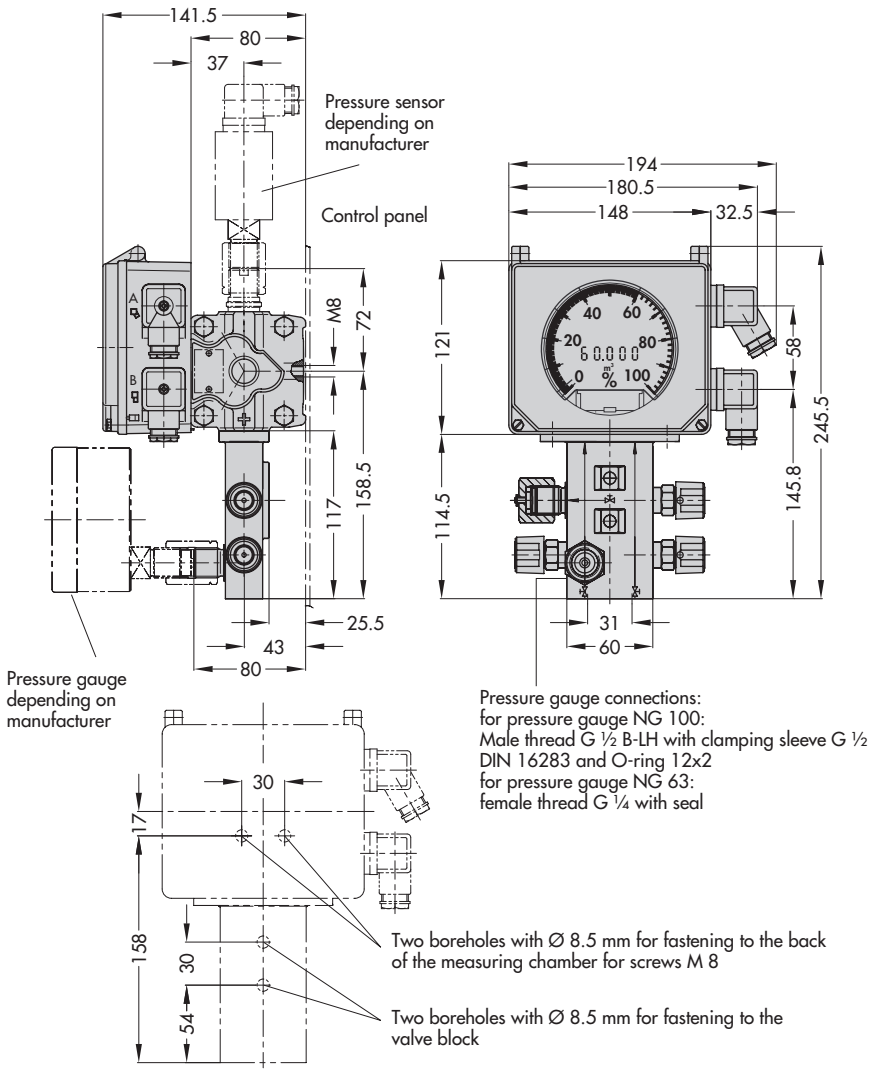


Fig. 8 · Dimensions

Physikalisch-Technische Bundesanstalt
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TRANSLATION

(1) **EC TYPE EXAMINATION CERTIFICATION**

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**

(3) EC Type Examination Certificate Number

PTB 00 ATEX 2074

(4) Equipment: Model MEDIA 5006- . 1Differential Pressure Meter

(5) Manufacturer: SAMSON AG Mess-und Regeltechnik

(6) Address: Weismüllerstr. 3, D-60314 Frankfurt

(7) This equipment and any acceptable variation thereof are specified in the schedule to this certificate and the documents referred to therein.

(8) The Physikalisch-Technische Bundesanstalt, certified body number 0102 in according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirement relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report.

PTB Ex 00-20139

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with

EN 50014: 1997 **EN 50020: 1994**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) Accroding to the Directive 94/9/EC, this EC TYPE EXAMINATION CERTFICATE relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of the equipment.

EC Type Examination Certificates without signature and seal are invalid.
This EC Type Examination Certificate may only be reproduced in its entirety and without any changes, schedule included.
Extracts or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

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Braunschweig und Berlin

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(12) The marking of the equipment shall include the following:

II 2 G EEx ia IIC T6

Zertifizierungsstelle Explosionsschutz Braunschweig, 29 June 2000
By order

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirketor

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(13) **Schedule**

(14) **EC TYPE EXAMINATION CERTIFICATE No. PTB 00 ATEX 2074**

(15) **Description of Equipment**

The Model MEDIA 5006- .1 Differential Pressure Meter serves for measuring and indicating the differential pressure, or measured variables derived therefrom, in gases or liquids.

The Model MEDIA 5006- .1 Differential Pressure Meter is a passive two-terminal network that may connected to all certified intrinsically safe circuits, provided the permissible maximum values of U , I and P are not exceeded.

The device may be used in hazardous and non hazardous locations.

The correlation between temperature classifcation and permissible ambient temperature range is shown in the table below.

Temperture class	Permissible ambient temperature range
T6	-20°C . . . 60°C
T5	-20°C . . . 70°C
T4	-20°C . . . 80°C

Electrical data

Maximum values:
Signal circuit (plug A)

Type of protection; Intrinsic safety EEx ia IIC
only for connection to a certified intrinsically safe circuit

Ui	≤ 28 V
Ii	≤ 115 mA
Pi	≤ 1 W
Ci ≤ 5,3 nF	Li ≤ 30 µH

Maximum values:
Software limit switches (plug B)

Type of protection; Intrinsic safety EEx ia IIC
only for connection to a certified intrinsically safe circuit

Ui	≤ 20 V
Ii	≤ 60 mA
Pi	≤ 250 mW
Ci ≤ 5,3 nF	Li = negligible

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Braunschweig und Berlin

PTB

(16) Test Report **PTB Ex 00-20139**

(17) **Special conditions for safe use**

None

(18) **Special Health and Safety Requirements**

In compliance with the standards specified above

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 29 June 2000

(Signature) (seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirektor

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Ptb26-5006.doc

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

PTB

TRANSLATION

ADDENDUM No.: 1

in compliance with Directive 94/9/EC Annex III Clause 6
to the EC Type Examination Certificate PTB 00 ATEX 2074

Equipment: Model Media 5006-.1 Differential Pressure Meter

Marking: **II 2 G EEx ia IIC T6**

Manufacturer: SAMSON AG

Address: Weismüllerstr. 3, D-60314 Frankfurt, Germany

Description of the additions and modifications

In future the Model Media 5006-.1 Differential Pressure Meter may be manufactured in compliance with the certification documents identified in the associated test report.

Th circuit was modified for functional reasons.

The modifications related to the design and construction.

The electrical data are changed as follows:

Electrical data

Signal circuit (connector A)

Maximum values:
U = 28 V
Ii = 115 mA
Pi = 1 W
Ci = 9.3 nF
Li = negligible

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Addendum No. 1 to the EC Type Examination Certificate PTB 00 ATEX 2074

Software limit switches (connector B)

Type of protection: Intrinsic Safety EEx ia IIC only for connection to a certified intrinsically safe circuit

Maximum values:
U = 20 V
I = 60 mA
P = 250 mW
C = 5.3 nF
L = negligible

All the other data apply without change also to this Addendum No. 1.

Test report: **PTB EX 01-21060**

Zertifizierungsstelle Explosionsschutz
By order

Braunschweig, 07 June 2001

(Signature) (Seal)

Dr. Ing. U. Johannsmeyer
Regierungsdirketor

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